March 20, 2008

U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety Administration**

East Building, PHH-30
1200 New Jersey Avenue S.E.
Washington, D.C. 20590

DOT-SP 14457
(THIRD REVISION)

EXPIRATION DATE: September 30, 2009

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Amtrol Alfa Metalomecanica, SA
Guimares, Portugal
(U.S. Agent: Amtrol Inc., West Warwick, RI)

2. PURPOSE AND LIMITATION:

a. This special permit authorizes the manufacture, marking, sale and use of a non-DOT specification fully-wrapped fiberglass composite cylinder with a welded non-heat treated carbon steel liner for the transportation in commerce of the materials authorized by this special permit. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.

b. The safety analyses performed in the development of this special permit only considered the hazards and risks associated with the transportation in commerce.

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.304a(a)(1); 175.3, and 178.71 in that a non-DOT specification cylinder is not authorized except as specified herein.

NOTE: This does not relieve the grantee of this special permit from securing and maintaining a valid approval for the foreign manufacture of cylinders from the Associate Administrator for Hazardous Materials Safety.

5. BASIS: This special permit is based on the application of Amtrol Alfa Metalomecanica, SA, dated December 23, 2006 and supplemental information dated May 31, November 8, 2007 submitted in accordance with § 107.105 and the public proceeding thereon and additional information dated January 8, 2008, and January 31, 2008.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identi-fication Number**	**Packing Group**
Butane see also Petroleum gases, liquefied	2.1	UN1011	N/A
Compressed gas, flammable, n.o.s.	2.1	UN1954	N/A
Hydrocarbon gas mixture, liquefied, n.o.s.	2.1	UN1965	N/A
Liquefied gas, flammable, n.o.s.	2.1	UN3161	N/A
Petroleum gases, liquefied or Liquefied petroleum gas	2.1	UN1075	N/A
Propane see also Petroleum gases, liquefied	2.1	UN1978	N/A
Dichlorodifluoromethane or Refrigerant gas R12	2.2	UN1028	N/A
Chlorodifluoromethane or Refrigerant gas R22	2.2	UN1018	N/A
1,1,1,2-Tetrafluoroethane 04 Refrigerant gas R134a	2.2	UN3159	N/A
Liquefied gas n.o.s. (contains refrigerant gases R22, R152, and R124)	2.2	UN3163	N/A
Liquefied gas n.o.s. (contains refrigerant gases R22, R125, and R290)	2.2	UN3163	N/A
Refrigerant gas R404A	2.2	UN3337	N/A
Refrigerant gas R407A	2.2	UN3338	N/A

Hazardous Materials Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identi-fication Number**	**Packing Group**
Liquefied gas n.o.s. (contains refrigerant gases R410A, R32, and R125)	2.2	UN3163	N/A
Chlorodifluoromethane and chloropentafluoroethane mixture or Refrigerant gas R502	2.2	UN1973	N/A
Liquefied gas n.o.s. (contains Azeotropic mixture of R125 and R143A	2.2	UN3163	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification, fully-wrapped fiberglass composite cylinder with a welded carbon steel liner. Cylinders must be designed, manufactured, and tested in accordance with the design and construction requirements for UN Composite Cylinders specified in § 178.71(l)(ii) except as detailed below and with Amtrol Alfa Metalomecanica, SA's specification and drawings on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA). Additionally, cylinders must be in conformance with the following:

(1) Type size and service pressure.

Maximum Volume: 24 Liters (6.3 Gallons);

Maximum service pressure: 28 bars (406 psi);

Minimum test pressure = 1.5 x service pressure up to a maximum of 42 bar (609 psig);

Minimum burst pressure: 2 x test pressure

(2) Inspection and testing.

All testing and inspections must be in accordance with ISO 11119-2 referenced in § 178.71 except for the welded steel liner and the hydraulic expansion test of the cylinder.

(3) Materials.

Liner – Liner materials must be in accordance with Amtrol Alfa Metalomecanica, SA special permit, DOT-SP 10277.

Filament material – a mono component glass fiber in a polypropylene matrix in accordance with ISO 11119-2.

(4) Design and Manufacture.

The liner must be designed, manufactured and tested in accordance with the requirements of Amtrol Alfa Metalomecanica, SA specification and drawings on file with the OHMSPA.

- The liner must have a minimum burst pressure greater than or equal to the test pressure. For example for a cylinder with 28 bar service pressure, the liner's burst pressure ≥ 42 bar.

- Welding procedures and welder qualification must be in accordance with CGA pamphlet C-3 or ISO standards 15614-1, 9606-1 and 14732.

All other design testing and manufacturing processes of the composite cylinder must be in accordance with ISO 11119-2 and additional testing described herein.

(5) Batch (Lot) Inspection and Testing.

All batch testing and inspection must be in accordance with ISO 11119-2 except as noted in paragraph 7.a.(2).

(6) Design qualification tests.

Prior to initial shipment of any specific cylinder design, qualification tests must have been performed on representative cylinders with satisfactory results. All cylinders used for design qualification tests must be fabricated on the same equipment and subjected to the same processes as is used to produce cylinders intended for charging and shipment. All tests must be

witnessed by an independent inspector. Test reports must be kept on file by the cylinder manufacturer and made available to the independent inspector and the Office of Hazardous Materials Safety upon request. Required testing for design changes must be as specified in ISO 11119-2.

(7) Flawed Tolerance Test.

Two completed cylinders shall be prepared for performing flawed tolerance test. Each cylinder shall have two cuts into the composite side-wall. One cut shall be longitudinal and the other transverse. The size of each must be as described here in:

- Width = 1mm, length = 5 times the composite thickness, depth = at least 40% of the composite thickness.

- One flawed cylinder shall withstand the ambient pressure cycling test to 5000 pressure cycles to 2/3 times test pressure w/o leaking;

- Second flawed cylinder shall withstand the burst test to at least 4/3 times the test pressure;

- Test reports must be kept on file by the cylinder manufacturer and made available to the independent inspector and the OHMSPA.

(8) Pressure relief devices and valve protection.

Each cylinder must be equipped with a pressure relief device in accordance with § 173.301(f). Protection for valves and other connections must be in accordance with § 173.301(h).

(9) Drop Test.

Drop test must be in accordance with ISO 11119-2, referenced in § 178.71. Visual damage shall be noted after each drop. No repairs to the cylinder or repair/replacement of outer casing shall be made during the drop test.

b. MARKING: Each cylinder must be permanently marked "DOT-SP 14457" on the exterior surface.

c. TESTING - Each cylinder must be retested at least once every five (5) years using a hydraulic proof pressure test equal to 1.5 times the marked service pressure. The test pressure must be held for a minimum of 3 minutes without any loss of pressure. The retester must hold a valid DOT RIN. The outer plastic shell shall not be removed during the retesting. Prior to performing the hydrostatic pressure test, each cylinder must be subjected to external and internal visual inspections. Any cylinder with damage to the outer plastic cover which exposes the composite shell must be rejected. The internal visual inspection must look for internal defects (e.g. isolated pits, cracks) in accordance with CGA Pamphlet C-6. A cylinder that has been exposed to fire or chemicals that show exterior degradation of the exterior surface must be rejected.

d. OPERATIONAL CONTROLS -

(1) A cylinder service life may not exceed 15 years from the date of manufacture as marked on the cylinder. The Associate Administrator for Hazardous Materials Safety (AAHMS) may approve an extension of cylinder service life up to a total service life of 30 years. A service life extension approval is made by modification to the special permit authorizing cylinder construction. Approvals of service life extension will be addressed under the following procedures:

(i) The cylinder manufacturer must submit a Service Life Extension Plan that includes: a cylinder life cycle analysis; an in-service inspection and testing program to monitor and validate the cylinder life cycle analysis; and a proposal for the periodic reporting of data to the AAHMS. This Plan must be submitted as a part of the original special permit application.

(ii) The in-service inspection and testing program must begin within one year of the date the special permit is granted.

(iii) The manufacturer must submit a final report based on data gathered during the in-service inspection and testing program, on cylinders with service lives up to 12 years. This report must be

submitted to the AAHMS no more than 13 years after the date the original special permit is granted.

(iv) The AAHMS will make a decision to approve or reject a service life extension based on the review of the final report. The manufacturer will be notified of the decision within 180 days after the AAHMS receives the final report.

(2) Filling requirements are subject to all terms contained in §§ 173.304 and 173.304a for DOT 4BA specification cylinders. Persons refilling cylinders authorized by this special permit must follow manufacturer's recommendations for pre-fill inspections.

(3) A cylinder that has been subjected to fire may not be returned to service.

(4) Cylinders must be packaged in accordance with the requirements in § 173.301(a)(9).

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this special permit for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this special permit.

b. A person who is not a holder of this special permit, but receives a package covered by this special permit, may reoffer it for transportation provided no modification or change is made to the package and it is offered for transportation in conformance with this special permit and the HMR.

c. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

d. Each packaging manufactured under the authority of this special permit must be either (1) marked with the name of the manufacturer and location (city and state) of the facility at which it is manufactured or (2) marked with a registration symbol designated by the Office of Hazardous Materials Special Permits and Approvals for a specific manufacturing facility.

e. A current copy of this special permit must be maintained at each facility where the package is manufactured under this special permit. It must be made available to a DOT representative upon request.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, and cargo aircraft only.

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel, aircraft or motor vehicle used to transport packages covered by this special permit. The shipper must furnish a copy of this special permit to the air carrier before or at the time the shipment is tendered.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
- Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
- Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

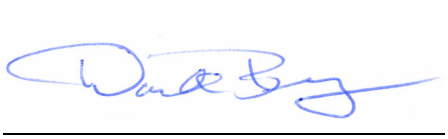
No person may use or apply this special permit, including display of its number, when this special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)—"The Hazardous Materials Safety and Security Reauthorization Act of 2005" (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term

"exemption" to "special permit" and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 - Immediate notice of certain hazardous materials incidents, and 171.16 - Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety -- OHMSPA, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for Theodore L. Willke
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Material Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm. Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

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